

In the Claims

1. (Currently Amended) A hollow fiber membrane module, comprising (a) a cylindrical case, (b) a first sealing body provided for sealing a first end of the cylindrical case, (c) a second sealing body provided for sealing a second end of the cylindrical case, (d) a first cap provided for the cylindrical case outside the first sealing body, (e) a second cap provided for the cylindrical case outside the second sealing body, (f) a filtration chamber formed by an inner wall surface of the first sealing body, an inner wall surface of the second sealing body and an inner wall surface of the cylindrical case, (g) a first chamber formed by an inner wall surface of the first cap and an outer wall surface of the first sealing body, (h) a second chamber formed by an inner wall surface of the second cap and an outer wall surface of the second sealing body, (i) a hollow fiber membrane bundle contained positioned in the filtration chamber and attached to the first sealing body, with a first end of the bundle opened toward the first chamber, and attached to the second sealing body, with a second end of the bundle closed against the second chamber; or attached to the first sealing body, wherein the first and second ends of the bundle opened in the direction of the first chamber, and wherein the bundle is curved in U-shape, (j) a raw water supply port formed on ~~a lateral face of~~ the cylindrical case, ~~and opened~~ toward the filtration chamber in a position near the second sealing body and connected to a raw water supply pipe, (k) an air discharge port formed on ~~a lateral face of~~ the cylindrical case, ~~and opened~~ toward the filtration chamber in a position near the first sealing body and connected to an air and overflowing water discharge pipe, (l) fluid flow holes for allowing the flow of air and drain fluid, formed in the second sealing body and through the second sealing body from the filtration chamber, (m) a filtrate delivery port formed on the first cap, ~~and opened~~ toward the first chamber

and connected to a filtrate delivery pipe, and (n) a drain port formed on the second cap, and opened toward the second chamber and connected to a drain pipe.

2. (Previously Presented) A hollow fiber membrane module, according to claim 1, wherein the minimum lateral cross sectional area defined by an inner circumferential face of the cylindrical case is at least 150 cm² and the packing rate of the hollow fiber membranes constituting the hollow fiber membrane bundle at the inner wall surface position of the first sealing body is in a range of 40 to 70%.

3. (Previously Presented) A hollow fiber membrane module, according to claim 1, wherein at the first or second sealing body, the hollow fiber membrane bundle attached to the first or second sealing body is kept apart from the inner wall surface of the cylindrical case by means of a spacer protruding from the inner wall surface of the cylindrical case.

4. (Previously Presented) A hollow fiber membrane module, according to claim 3, wherein the protruding height of said spacer from the inner wall surface of the cylindrical case is in a range of 2 to 10 mm.

5. (Previously Presented) A hollow fiber membrane module, according to claim 4, wherein one face of said spacer facing to the first or second sealing body is inclined in the direction leaving from the inner wall surface of the first or second sealing body toward the center of the cylindrical case.

6. (Previously Presented) A hollow fiber membrane module, according to claim 1, further comprising an openable and closable cover provided at the crest of the first cap to allow repair of the hollow fiber membranes of the hollow fiber membrane bundle attached to the first sealing body.

7. (Previously Presented) A hollow fiber membrane module, according to claim 1, wherein the second cap further comprises an air supply port having a restriction opened toward the second chamber and a check valve.

8. (Original) A hollow fiber membrane module, according to claim 1 or 2, wherein the cylindrical case is a flow-molded article or thermoformed article made of a thermoplastic resin.

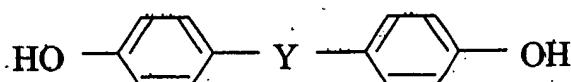
9. (Original) A hollow fiber membrane module, according to claim 8, wherein the thermoplastic resin is a polyvinyl chloride resin.

10. (Previously Presented) A hollow fiber membrane module, according to claim 9, wherein the polyvinyl chloride resin contains a non-lead compound suitable to act as a thermal stabilizer.

11. (Previously Presented) A hollow fiber membrane module, according to claim 1 or 2, wherein the cylindrical case comprises an acrylonitrile-X-styrene copolymer (AXS) resin.

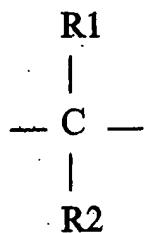
12. (Previously Presented) A hollow fiber membrane module, according to claim 11, wherein X is ethylene propylene rubber or acrylic rubber.

13. (Previously Presented) A hollow fiber membrane module, according to claim 1, wherein a resin used to form the first or second sealing body is an epoxy resin having bisphenol represented by the following general formula



(wherein Y is an alkylene group).

14. (Previously Presented) A hollow fiber membrane module, according to claim 13, wherein Y is:



(wherein R1 and R2 respectively are a C_nH_{2n+1} (wherein n is 0 or an integer of 2 or more)).

15. (Original) A hollow fiber membrane module, according to claim 13 or 14, wherein the epoxy resin is a bisphenol F type epoxy resin.

16. (Previously Presented) A hollow fiber membrane module, according to claim 13, wherein the epoxy resin penetrates into pore spaces formed in the membrane of the hollow fiber membrane bundle by 1 vol% or more of the volume of the pore spaces.

17. (Previously Presented) A hollow fiber membrane module, according to claim 1, wherein the filtration chamber is a pressurization type, wherein the filtration chamber is pressurized at higher than atmospheric pressure during filtration or backwashing.

18. (Previously Presented) A hollow fiber membrane module unit which comprises at least two hollow fiber membrane modules defined in claim 1, wherein the respective air discharge ports of the hollow fiber membrane modules are connected with a common pipe that is located at a position lower than the respective air discharge ports.

19. (Previously Presented) A hollow fiber membrane module unit, according to claim 18, wherein the hollow fiber membrane modules are mounted in at least one row on a frame.

20. (Previously Presented) A hollow fiber membrane module unit, according to claim 19, wherein said at least one row of said hollow fiber membrane modules are positioned symmetrically about a line or a zigzag.

21. (Previously Presented) A hollow fiber membrane module unit, according to claim 20, wherein the respective raw water supply ports of the hollow fiber membrane modules are connected with a common raw water supply pipe, and the filtrate delivery ports of the hollow fiber membrane modules are connected with a common filtrate delivery pipe.

22. (Previously Presented) A hollow fiber membrane module unit, according to claim 20, wherein at least one of the pipes connected with the raw water supply ports, the air discharge ports, the filtrate delivery ports and the drain ports is connected by means of a loose joint at the connection.

Claims 23 – 27 (Cancelled)

28. (New) A hollow fiber membrane module, comprising (a) a cylindrical case comprising a main case member and first and second sealing body attaching members provided for first and second ends of the case member, respectively, (b) a first sealing body provided for sealing the first end of the cylindrical case member, (c) a second sealing body provided for sealing the second end of the cylindrical case member, (d) a first cap provided for the first sealing body attaching member outside the first sealing body, (e) a second cap provided for the second sealing body attaching member outside the second sealing body, (f) a filtration chamber formed by an inner wall surface of the first sealing body, an inner wall surface of the second sealing body and an inner wall surface of the cylindrical case, (g) a first chamber formed by an inner wall surface of the first cap and an outer wall surface of the first sealing body, (h) a second chamber formed by an inner wall surface of the second cap and an outer wall surface of the second sealing body, (i) a hollow fiber membrane bundle positioned in the filtration chamber and attached to the first sealing body, with a first end of the bundle opened toward the first chamber, and attached to the second sealing body, with a second end of the bundle closed against the

second chamber; or attached to the first sealing body, wherein the first and second ends of the bundle open in the direction of the first chamber, and wherein the bundle is curved in U-shape, (j) a raw water supply port formed on the cylindrical case and opened toward the filtration chamber in a position near the second sealing body, (k) an air discharge port formed on the cylindrical case and opened toward the filtration chamber in a position near the first sealing body, (l) fluid flow holes for allowing the flow of air and drain fluid, formed in the second sealing body and through the second sealing body from the filtration chamber, (m) a filtrate delivery port formed on the first cap and opened toward the first chamber, and (n) a drain port formed on the second cap and opened toward the second chamber.

29. (New) The hollow fiber membrane module, according to claim 28, wherein the raw water supply port is formed on the second sealing body attaching member.

30. (New) The hollow fiber membrane module, according to claim 28, wherein the air discharge port is formed on the first sealing body attaching member.